

1 Claims

2 1. Optical module with

- 3 - a rigid circuit carrier (10) comprising a component-
- 4 equipped area (10a);
- 5 - an unpackaged semiconductor element (12) arranged by
- 6 means of flip-chip technology on the component-
- 7 equipped area (10a); and
- 8 - a lens unit (14; 16, 18, 20; 21), which is arranged on
- 9 the side (10b) of the circuit carrier (10) facing away
- 10 from the component-equipped surface (10a);
- 11 - with the circuit carrier (10) featuring an opening
- 12 (24), through which electromagnetic radiation is
- 13 projected from the lens unit (14; 16, 18, 20; 21) onto
- 14 the semiconductor element (12);
- 15 - and with the lens unit (14; 16, 18, 20; 21) comprising
- 16 a lens holder (14) and a lens arrangement (16, 18, 20;
- 17 21) with at least one lens,

18 characterized in that

19 at least one permanently flexible or springy element (22)
20 is arranged between lens holder (14) and circuit carrier
21 (10), which presses the component-equipped surface (10a) of
22 the circuit carrier (10) away from the lens holder (14)
23 against at least one stop element (13; 35) which forms a
24 tight fit (37) to the lens unit (14; 16, 18, 20; 21).

25 2. Optical module in accordance with claim 1,

26 characterized in that

27 the positive contact is implemented by a positive-contact
28 surface (37) embodied on the stop element (13; 35).

29 3. Optical module in accordance with claim 1 or 2,

30 characterized in that,

31 the stop element (13) is part of a snap-on connection.

- 1 4. Optical module in accordance with claim 3,
2 characterized in that,
3 the stop element (13) is implemented by hooks arranged on
4 the lens holder (14).
- 5 5. Optical module in accordance with claim 1,
6 characterized in that
7 the stop element (35) is part of a screw or rivet
8 connection (33).
- 9 6. Optical module in accordance with claim 5,
10 characterized in that,
11 the stop element (35) is implemented by spacer bolts or
12 screw holes (35) embodied on the lens holder (14).
- 13 7. Optical module in accordance with one of the previous
14 claims,
15 characterized in that,
16 the permanently flexible or springy element (22) is
17 embodied as a rectangular or annular shape, preferably as
18 a punched part.
- 19 8. Optical module in accordance with one of the previous
20 claims,
21 characterized in that,
22 the permanently flexible or springy element (22) contains
23 thermoplastic elastomers (TPE) or Silicon.
- 24 9. Optical module in accordance with one of the previous
25 claims,
26 characterized in that
27 the permanently flexible or springy element (22) seals the
28 lens unit (14; 16, 18, 20; 21) against the circuit carrier
29 (10).
- 30 10. Optical module in accordance with one of the previous

- 1 claims,
2 characterized in that
- 3 the permanently flexible or springy element (22) is
4 embodied to be porous, especially as a foam rubber type
5 sealing element.
- 6 11. Optical system with an optical module in accordance with
7 one of the previous claims.